

Appendix C

John J. Mosses - NBI



Wood turtle

Findings of Appropriateness and Compatibility Determinations

Findings of Appropriateness and Compatibility Determinations

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FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Berry Picking, Mushroom Collecting, and Flower Picking

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒ **Appropriate** ☐

Refuge Manager: Greta W. Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Berry Picking, Mushroom Collecting, and Flower Picking

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Berry picking, mushroom collecting, and flower picking are not identified as a priority public uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. These uses will not be allowed on the refuge for several reasons.

Impacts such as trampling vegetation and wildlife disturbance would occur. Visitors walking off established public use trails may impact plants indirectly by compacting soils, increasing erosion, and walking on young plants, reducing survival and regeneration. Berries, mushrooms, and flowers can be important sources of food for various wildlife species and the removal of these can have adverse effects on wildlife species. Also, collecting of natural materials is prohibited on refuge lands by 50 C.F.R. 27.51, except by special use permit.

After evaluating these uses under Service policies, we conclude that we will not allow these activities. Berry picking, mushroom collecting, and flower picking do not support a refuge purpose, goal, or objective and would not benefit the resources within the refuge. Therefore, we find these, and similar activities, to not be appropriate for the Great Bay Refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Bicycling off Public Entrance Road

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ✓ **Appropriate** _____

Refuge Manager: Graham W. Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Bicycling off Public Entrance Road

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Bicycling is not a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). Bicycling will not be allowed on the trails or anywhere else on the refuge.

Bicycling may degrade the trails and cause further erosion. Although foot travel is allowed on established trails so that visitors may experience the priority public uses of wildlife observation, photography, and environmental education, biking is not required to experience these uses. Biking may degrade the trail, cause further erosion, and cause safety hazards to other visitors.

After evaluating bicycling under Service policies, current conditions, required maintenance, and demand, we conclude that we will not allow this activity. Prohibiting bicycling may positively impact soils and wildlife; if only by reducing the amount of erosion and soil compaction that might occur on trails and the frequency and extent of wildlife disturbance. Biking is not a wildlife-dependent public use, nor is it necessary to support a priority public use, and it may decrease the enjoyment of the refuge for other visitors.

However, bicycling does provide a means for many area residents and visitors to get to the refuge, and this finding does not restrict that use. The refuge does allow bicycling on the entrance road and has bike rack available at the trail parking area. There are also many other sites throughout the surrounding area that provide opportunities for bicycling.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Camping

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	<input checked="" type="checkbox"/>	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	
(g) Is the use manageable within available budget and staff?		<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?		<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ☒.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒ **Appropriate** _____

Refuge Manager: Graham W. Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Camping

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Camping is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. Camping will not be allowed on the refuge for several reasons.

If we allow camping on the refuge, visitors may wander offtrail to find suitable sites and consequently cause increased soil and vegetation compaction and disturbance to wildlife. Since camping would involve staying overnight on the refuge, visitors may also start fires for cooking and cut refuge vegetation for use as firewood. Unattended fires could present a fire risk. Visitors engaged in camping may also leave behind trash, food, and human waste, which could attract nuisance wildlife, result in ecological damage, and create aesthetic problems. Law enforcement and safety may also become greater concerns if campers are not responsible or do not exercise caution.

After evaluating camping under Service policies, we conclude that we will not allow this activity. Since we have never permitted camping on the refuge, we do not expect that prohibiting this activity will significantly impact current or future visitors. However, prohibiting camping may positively impact wildlife and wildlife habitat by reducing:

- The amount trash, food, and human waste left behind.
- Soil compaction and vegetation trampling.
- The frequency and extent of wildlife disturbance.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Dog Walking

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	<input checked="" type="checkbox"/>	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		<input checked="" type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ☒.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒ **Appropriate** _____

Refuge Manager: Graham W Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Dog Walking

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Dog-walking is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. Dog walking will not be allowed on the refuge for several reasons.

Many wildlife species perceive dogs as natural predators, which causes them to react to the presence (visual/scent) of dogs. Common reactions include vacating and avoiding areas disturbed by dogs (Lima and Bednekoff 1999, Lenth et al. 2006). Domestic dogs can also depredate native wildlife (Gill 1994).

Researchers have found that dogs displace native migratory bird species from their native habitats (Banks and Bryan 2007). Studies have also indicated that the presence of dogs on trails can decrease wildlife use within 330 feet (100 meters) of the trail (Lenth et al. 2006). Since the presence of dogs disturbs native wildlife, permitting dog walking may decrease the ability of refuge visitors to engage in wildlife observation, a priority public use of the refuge.

After evaluating dog walking under Service policies, we conclude that we will not allow this activity. We will maintain and enhance existing signage indicating dogs are not permitted to improve compliance. There are also many sites throughout the surrounding area that provide opportunities for dog owners to take their pets.

LITERATURE CITED:

- Banks, P.B. and J.V. Bryant. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Animal Behavior* 3: 611-613.
- Gill, M. 1994. Bird flushing by dogs at proposed Eastshore State Park: Can they all just get along? *In* Contemporary Topics in Environmental Sciences. D. Sloan, E. Edlund, M. Christensen, K. Taylor, eds. U.C. Berkeley, Berkeley, Ca.
- Lenth, B., M. Brennan, R. L. Knight. February 2006. The Effects of Dogs on Wildlife Communities. Final research report submitted to Boulder County Open Space and Mountain Parks.
- Lima, S.L. and P.A. Bednekoff. 1999. Temporal variation in danger drives anti-predator behavior: the predation risk allocation hypothesis. *American Naturalist* 153:649-659.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Geocaching (Physical Caches and/or Off-trail)

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ✓ **Appropriate** _____

Refuge Manager: Graham W Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Geocaching (Physical Caches and/or Off-trail)

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Geocaching is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. This use will not be allowed on the refuge for several reasons.

This activity involves the placement of a physical cache of items in a hidden location where other people subsequently search for the hidden items. The placement of these hidden items encourages visitors to leave designated public use trails and enter into closed areas where public use is restricted. Impacts include habitat damage from the trampling of vegetation and disturbance to wildlife.

Geocaching does not support a refuge purpose, goal or objective and would not benefit the resources within the refuge. After evaluating geocaching under Service policies, we conclude that we will not allow this activity.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Horseback Riding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	<input checked="" type="checkbox"/>	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	
(g) Is the use manageable within available budget and staff?		<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?		<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ☒.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒ **Appropriate** _____

Refuge Manager: Grady W. Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Horseback Riding

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Horseback riding is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. Horseback riding will not be allowed on the refuge for several reasons.

Horseback riding may impact soils and native vegetation through trampling and soil compaction (Kuss 1986). Horses may also leave piles of manure along the trail, degrading the enjoyment of the refuge for other visitors. Additionally, horse manure may contain viable seeds from invasive plants (Wells and Lauenroth 2007) which could become a management problem for the refuge.

Although foot travel is allowed on established trails so that visitors may experience the priority public uses of wildlife observation, photography, and environmental education, horseback riding is not required to experience these uses. Horseback riding may degrade the trail, cause further erosion on steeper areas of trails, and cause safety hazards to other visitors (Deluca et al. 1998).

After evaluating horseback riding considering Service policies, current refuge conditions, aesthetic and ecological implications, required maintenance, and demand, we conclude that we will not allow this activity. Prohibiting horseback riding may positively impact soils and wildlife; if only by reducing the amount of erosion and soil compaction that might occur on trails, the frequency and extent of wildlife disturbance, and preventing a potential vector of invasive plants. Horseback riding is not a wildlife-dependent public use, nor is it necessary to support a priority public use, and it may decrease the enjoyment of the refuge for other visitors.

LITERATURE CITED:

- Deluca, T.H., W.A. Patterson, W.A. Friedmund, and D.N. Cole. 1998. Influence of llamas, horses, and hikers on soil erosion from established recreation trails in western Montana, USA. *Environmental Management* 22(2): 255-262.
- Kuss, F.R. 1996. A review of the major factors influencing plant responses to recreation impacts. *Environmental Management* 10: 638-650.
- Wells F.H., and W. K. Lauenroth. 2007. The Potential for Horses to Disperse Alien Plants Along Recreational Trails. *Rangeland Ecology & Management*: Vol. 60, No. 6 pp. 574–577.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Jogging

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ✓ **Appropriate** _____

Refuge Manager: Grady W Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Jogging

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are reevaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Jogging is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. Jogging, although permitted in the past, will no longer be allowed on the refuge for several reasons.

The presence of people jogging could result in some disturbance to wildlife located in habitats adjacent to the trail system. Recreational trail use has been shown to cause disturbance to wildlife up to 330 feet (100 meters) from trails (Taylor and Knight 2003). The established trails were developed so that visitors may engage in the priority public uses of wildlife observation, photography, and environmental education; jogging is not required to experience these uses. Further, the fact that it would result in incremental disturbance to wildlife additive to the priority public uses we are trying to accommodate, and may negatively affect the experience of visitors who are viewing wildlife, suggests there is no compelling reason to allow it.

After evaluating jogging under Service policies, we conclude that we will not allow this activity. Jogging is not a wildlife-dependent public use, nor is it necessary to support a priority public use, and it may decrease the enjoyment of the refuge for other visitors engaged in priority wildlife-dependent activities.

LITERATURE CITED:

Taylor, A. R., and R. L. Knight. 2003. Wildlife Responses to Recreation and Associated Visitor Perceptions. *Ecological Applications*, 13 (4), 2003, pp. 951-963.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Commercial Wildlife and Nature Photography

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate _____ **Appropriate** ✓

Refuge Manager: *Frederic W. Taylor* Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: *Sharon M. Munn* Date: 8/2/2012

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Commercial Wildlife and Nature Photography

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Commercial photography is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. However, non-commercial wildlife photography is a priority public use.

Visitors engaged in commercial photography could trample vegetation along refuge trails and disturb wildlife disturbance. Recreational trail use has been shown to cause disturbance to wildlife up to 330 feet (100 meters) from trails (Taylor and Knight 2003). Wildlife disturbance would be minimized through the mandatory use of temporary and portable blinds by permittees. Because the use would only be allowed when it supports conservation, the products could potentially offset short-term impacts by enhancing public awareness of the natural resources. Some commercial photography would occur along established refuge trails and could impact plants indirectly by compacting soils, increasing erosion, and walking on young plants, reducing survival and regeneration.

After evaluating commercial photography under Service policies, we conclude that we will allow this activity. Commercial wildlife and nature photography would support refuge purposes, goals or objectives and would benefit the resources within the refuge. Therefore, this activity has been found to be appropriate for the Great Bay Refuge.

LITERATURE CITED:

Taylor, A. R., and R. L. Knight. 2003. Wildlife Responses to Recreation and Associated Visitor Perceptions. *Ecological Applications*, 13 (4), 2003, pp. 951-963.

COMPATIBILITY DETERMINATION

USE:

Commercial Wildlife and Nature Photography

REFUGE NAME:

Great Bay National Wildlife Refuge

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Public Law 102-154, Section 319(d) Department of the Interior and Related Agencies Appropriations Bill, 1992.

REFUGE PURPOSE(S):

Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge) was established to:

- Encourage the natural diversity of plant, fish, and wildlife species within the refuge, and to provide for their conservation and management.
- Protect species listed as endangered or threatened or identified as candidates pursuant to the Endangered Species Act of 1973.
- Preserve and enhance the water quality of aquatic habitat within the refuge.
- To fulfill the international treaty obligations of the United States relating to fish and wildlife.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”—National Wildlife Refuge System Improvement Act of 1997 (Public Law 105–57; 111 Stat. 1282)

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The use is commercial photography, either still or motion pictures, of wildlife or nature scenes for conservation uses. This is not a priority public use, but would be contributing to priority public uses.

(b) Where would the use be conducted?

This use will occur in areas of the refuge specified in the special use permit. The use will generally take place in areas that are open to visitors including the refuge road, parking lot, and trails. Visitors engaged in commercial photography will be required to use temporary or portable blinds to minimize disturbance to wildlife.

(c) When would the use be conducted?

The use may occur during daylight hours during the year.

(d) How would the use be conducted?

Requests must be submitted in writing to the refuge manager no less than 21 days prior to the requested date(s). Each request will be reviewed on a case-by-case basis and will require a special use permit. Other permits may be required depending on the commercial activity.

(e) Why is this use being proposed?

The refuge has received requests every 2 to 3 years to film or photograph habitats and/or wildlife. These requests will contribute to enhancing awareness of conservation and recreational opportunities at the refuge.

AVAILABILITY OF RESOURCES:

Great Bay Refuge is an unstaffed satellite administered by Parker River Refuge. Staff time from Parker River Refuge will be required to review and oversee permits and should be available to do so.

Visitor Services Specialist (GS-12) (review requests)—1 day/year = \$475

ANTICIPATED IMPACTS OF THE USE:

Public uses, such as commercial photography, can produce short-term, negative direct or indirect impacts on wildlife or habitats. However, we believe the long-term benefits from the conservation nature of the products could be greater. Projects will be conducted at the appropriate time of year and conditions to minimize disturbances and incorporate other best management practices.

Direct Effects

Direct impacts are those where the activity has an immediate effect on wildlife and/or habitats.

Trail use may lead to trampling of vegetation adjacent to the trail or compaction of soil and leaf litter. These impacts are generally localized to areas adjacent to trails or areas of frequent off-trail use. Impacts of off-trail use can include a reduction in the density of plants near trails, soil compaction, increased erosion, and damage to, or killing of, plants (Colorado State Parks 1998). To reduce the potential for these types of disturbance, markers and refuge boundary signs encourage trail users to stay on the trail to minimize effects on surrounding vegetation.

The presence of humans walking along trails can directly disturb migratory birds and other wildlife species. Wildlife often respond to human presence by departing from the disturbed site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), using of sub-optimal habitat or non-preferred habitat (Erwin 1980, Williams and Forbes 1980), altering their behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increasing their energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Human disturbances can also decrease reproductive success by causing nest abandonment, decline in parental care, altering feeding schedules, and other stresses (Colorado State Parks 1998). It can cause shifts in habitat use, lead to abandonment of habitat, and increase energy demands in affected wildlife (Knight and Cole 1991). Hammitt and Cole (1998) conclude that the frequent presence of humans in natural areas can dramatically change the behavior of some wildlife species.

Wildlife responses to human disturbance vary by species, and by the type, level, frequency, duration, and time of year of the human use. For example generalist species, which thrive in disturbed areas, are often more abundant along trails than specialist species that are more sensitive to human disturbance (Colorado State Parks 1998). Adverse impacts also tend to increase as user groups increase in size (Beale and Monaghan 2004).

Walking along trails can have impacts even outside of the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. They also found that nest predation was greater near trails (Miller et. al 1998).

Overall, the direct effects of commercial wildlife and nature photography should be minor because visitors engaged in these activities will be required to use blinds and other techniques to minimize disturbance.

Indirect Effects

We do not anticipate any indirect, negative impacts from this use.

Cumulative Effects

Cumulative effects are effects that are minor when considered separately but may be important when considered collectively. The principal concerns are repeated disturbances of birds that are nesting, foraging, or resting.

We anticipate that this use will support refuge purposes, the National Wildlife Refuge System mission, and priority public uses, including environmental education and interpretation. It has the potential to have a very positive cumulative impact on the refuge's natural resources.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Great Bay Refuge, this compatibility determination underwent extensive public review, including a comment period of 39 days that followed the release of the draft Comprehensive Conservation Plan and Environmental Assessment.

DETERMINATION (CHECK ONE BELOW):

- ☐ Use is not compatible.
- ☒ Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- Sites for photo shoots will be submitted in advance and approved by the refuge manager.
- Blinds will be required for all areas that are not open to the public.
- No sound making or lighting devices will be permitted.
- Only commercial photography in support of conservation, refuge purposes, the National Wildlife Refuge System Mission, and/or for educational and interpretive purposes will be permitted.
- A special use permit will be required. Other permits may be required depending on the commercial activity.

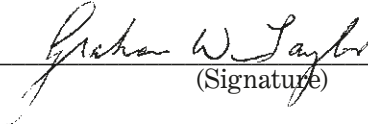
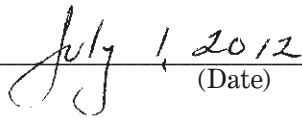
JUSTIFICATION:

This program as described is determined to be compatible. Any potential negative impacts of commercial wildlife and nature photography activities on refuge resources will be minimized by the restrictions included in the conditions of the special use permit. In addition, the activities associated with commercial photography will be regulated and monitored by refuge staff.

The Service permits commercial photography where it would further outreach, education, or public understanding of the natural environment, refuge resources and management, or the Refuge System and Service's missions. No approvals for a permit would occur until the refuge manager can insure those benefits would result.

As such, all approved commercial wildlife and nature photography will contribute to the goals of the refuge and Refuge System, and will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager:  (Signature)  (Date)

CONCURRENCE:

Regional Chief:  (Signature)  (Date)

MANDATORY 10 YEAR RE-EVALUATION DATE:



LITERATURE CITED:

- Beale, C. M., and P. Monaghan. 2004. Human disturbance: people as predation-free predators? *Journal of Applied Ecology* 41:335-343.
- Belanger, L., and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management*. 54:36-41.
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- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin* 19:242-248.
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- Miller, S.G., R.L. Knight, and C.K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29(1): 124-132.
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- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl*. 24:123-130.
- Ward, D. H., and R. A. Stehn. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service. Anchorage, Alaska. 193 pp.
- Williams, G. J., and E. Forbes. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl*. 31:151-157.

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Research by Non-Service Personnel

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate _____ **Appropriate** ✓

Refuge Manager: Graham W. Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: Shawn Munn Date: 8/2/2012

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Research by Non-Service Personnel

NARRATIVE:

Research conducted by non-U.S. Fish and Wildlife Service (Service) personnel is not identified as a priority public use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. However, research by non-Service personnel is often conducted by colleges and universities; Federal, State, and local agencies; nongovernmental organizations; and qualified members of the general public. Research on Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge) would further the understanding of the natural environment and could be applied to management of the refuge's wildlife. Research by others outside of the Service adds greatly to the information base for refuge managers to make informed decisions.

All research proposals are evaluated for their benefits to the refuge and the Refuge System mission. The refuge manager will issue a special use permit for all approved research projects. All research projects require the principal investigator to provide summary reports of findings and acknowledge the refuge for their participation.

Great Bay Refuge is an unstaffed satellite refuge administered by Parker River Refuge. No additional equipment, facilities, or improvements will be necessary to allow research by non-Service personnel. Projects would primarily include activities such as observing, banding, inventorying, and monitoring wildlife and habitats, and would not harm individual wildlife or result in long term alterations to habitat. Staff time would be required to review research proposals and oversee permitted projects. We expect that conducting these activities will require less than 10 percent of a work-year for one staff member.

Disturbance to wildlife and vegetation by researchers could occur through observation, mist-netting, banding, and accessing the study area by foot. It is possible that direct mortality could result as a by-product of research activities. Mist-netting for example, can cause stress, especially when birds are captured, banded, and weighed. There have been occasional mortalities to these birds, namely when predators, such as raccoons and cats, reach the netted birds before researchers do.

Minimal impact will occur when research projects which are previously approved are carried out according to the stipulations stated in the special use permit issued for each project. Overall, however, allowing well-designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained about a species, habitat, or public use.

After evaluating research by non-Service personnel under Service policies, we conclude that the activity is appropriate as it contributes to and supports refuge management, purposes, and goals, and the mission of the Refuge System.

COMPATIBILITY DETERMINATION

USE:

Research by Non-Service Personnel

REFUGE NAME:

Great Bay National Wildlife Refuge

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Public Law 102-154, Section 319(d) Department of the Interior and Related Agencies Appropriations Bill, 1992.

REFUGE PURPOSE(S):

Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge) was established to:

- Encourage the natural diversity of plant, fish, and wildlife species within the refuge, and to provide for their conservation and management.
- Protect species listed as endangered or threatened or identified as candidates pursuant to the Endangered Species Act of 1973.
- Preserve and enhance the water quality of aquatic habitat within the refuge.
- Fulfill the international treaty obligations of the United States relating to fish and wildlife.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”—National Wildlife Refuge System Improvement Act of 1997 (Public Law 105–57; 111 Stat. 1282)

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The use is research conducted by non-Service personnel. It is not identified as a priority public use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997.

There is much that can be learned from field research within the refuge. Baseline information in biological, geophysical, hydrological, and other fields is still in need of being collected. There are many opportunities for consultants, colleges and universities, and other agencies to obtain permission to conduct critical and noteworthy research on the refuge. Projects would primarily include activities such as observing, banding, inventorying, and monitoring wildlife and habitats, and would not harm individual wildlife or result in long term alterations to habitat.

Two provisions of the National Wildlife Refuge Improvement Act are to “maintain biological integrity, diversity, and environmental health” and to conduct “inventory and monitoring.” Monitoring and research are an integral part of refuge management. Plans and actions based on thorough research and consistent monitoring provide an informed approach to management effects on wildlife and habitat.

Currently, research applicants are required to submit a proposal that outlines the following:

- (1) Objectives of the study.
- (2) Justification for the study.
- (3) Detailed methodology and schedule.
- (4) Potential impacts on refuge wildlife or habitat, including disturbance (short- and long-term), injury, or mortality (this includes a description of measures the researcher will take to reduce disturbance or impacts).
- (5) Research personnel required.
- (6) Costs to refuge, if any.
- (7) Progress reports and end products (i.e., reports, thesis, dissertations, and publications).

Research proposals are reviewed by refuge staff and conservation partners, as appropriate, for approval. Evaluation criteria currently include, but are not limited to, the following:

- Research that will contribute to specific refuge management issues will be given higher priority over other research requests.
- Research that will conflict with other ongoing research, monitoring, or management programs will not be permitted.
- Research projects that can be accomplished off-refuge are less likely to be approved.
- Research that causes undue disturbance or is intrusive will likely not be permitted. Level and type of disturbance will be carefully evaluated when considering a request.
- Refuge evaluation will determine if any effort has been made to minimize disturbance through study design, including considering adjusting location, timing, scope, number of permittees, study methods, number of study sites, etc.
- If staffing or logistics make it impossible for the refuge to monitor researcher activity in a sensitive area, the research request may be denied, depending on the specific circumstances.
- The length of the project will be considered and agreed upon before approval. Projects will be reviewed annually.

(b) Where would the use be conducted?

The location of the research will vary depending on the individual research project that is being conducted. The entire refuge is available for scientific research. An individual research project is usually limited to a particular habitat type, plant species, or wildlife species. On occasion, research projects will encompass an assemblage of habitat types, plants or wildlife. The research location will be limited to those areas of the refuge that are absolutely necessary to conduct the research project and that do not create a significant negative impact to refuge operations and wildlife use.

(c) When would the use be conducted?

The timing of the research will depend entirely on the individual research project's approved design. Scientific research would be allowed to occur on the refuge throughout the year as long as that use does not present a significant negative impact to wildlife use and management operations. An individual research project could be short-term in design, requiring one or two visits over the course of a few days. Other research projects could be multiple year studies that require daily visits to the study site. The timing of each individual research project will be limited to the minimum required to complete the project. If a research project occurs during the refuge hunt, special precautions will be required and enforced to ensure public health and safety.

(d) How would the use be conducted?

The methods of the research will depend entirely on the individual research project that is conducted. The methods and objectives of each research project will be scrutinized well before it will be allowed to occur on the refuge. We will not permit a research project that lacks an approved study plan and protocol, compromises public health and safety, or presents a significant negative impact to wildlife resources or habitats within the refuge. This permitted research use must be regulated and governed by the conditions and other terms of a refuge special use permit. The special use permit will provide any needed protection to individual refuge policies, mission, wildlife populations, and natural habitats. In addition, all research projects require the primary investigator to submit written summary reports of all findings, and acknowledge the refuge staff's participation.

(e) Why is this use being proposed?

Research by non-Service personnel is conducted by colleges and universities; Federal, State, and local agencies; nongovernmental organizations; and qualified members of the public. Such studies further our understanding of the refuge's natural environment. Research is therefore an important part of the adaptive management process that often results in improved management of refuge habitats and wildlife populations. Much of the information that research generates can be applied to management practices both on, and adjacent to, the refuge.

The Service encourages and supports research and management studies on refuge lands that will improve and strengthen decisions for managing natural resources. The refuge manager encourages and seeks research that clearly relates to approved refuge objectives, improves habitat management, and promotes adaptive management. Priority research addresses information on better managing the nation's biological resources that are important to agencies of the Department of Interior, the Refuge System, and state fish and wildlife agencies, and that address important management issues or demonstrate techniques for managing species or habitats.

The refuge manager will also consider research for other purposes that may not relate directly to refuge-specific objectives, but contribute to the broader enhancement, protection, use, preservation, or management of native populations of fish, wildlife, and plants, and their natural diversity in the Northeast Region and/or the Atlantic Flyway. All proposals must comply with Service policy on compatibility.

AVAILABILITY OF RESOURCES:

Great Bay Refuge is an unstaffed satellite refuge administered by Parker River Refuge. No additional equipment, facilities, or improvements will be necessary to allow research by non-Service personnel. Staff from Parker River Refuge will be required to review research proposals and oversee permitted projects. We expect that conducting these activities will require less than 10 percent of a work-year for one staff member.

Anticipated costs are:

Senior Refuge Biologist (GS-12) (review request)—4 days/year = **\$1,900**

Refuge Manager (GS-13) (review and approval)—1 day/year = **\$500**

Law Enforcement Officer (GS-9) (enforcement patrols) —1 day/year = **\$400**

ANTICIPATED IMPACTS OF THE USE:

The Service encourages approved research to further the understanding of the natural resources. Research by other than Service personnel adds greatly to the information base for refuge managers to make proper decisions. Disturbance to wildlife and vegetation by researchers could occur through observation, mist-netting, banding, and accessing the study area by foot. It is possible that direct mortality could result as a by-product of research activities. For example, mist-netting can cause stress, especially when birds are captured, banded, and weighed. There have been occasional mortalities to these birds, namely when predators, such as raccoons and cats, reach the netted birds before researchers do.

Minimal impact will occur when research projects which are previously approved are carried out according to the stipulations stated in the special use permit issued for each project. Overall, however, allowing well designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained about an entire species, habitat, or public use.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Great Bay Refuge, this compatibility determination underwent extensive public review, including a comment period of 39 days that followed the release of the draft Comprehensive Conservation Plan and Environmental Assessment.

DETERMINATION (CHECK ONE BELOW):

- ☐ Use is not compatible.
- ☒ Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

We will require all researchers to submit a detailed research proposal that follows Great Bay Refuge study proposal guidelines (see attachment I) and Service Policy (FWS Refuge Manual Chapter 4, Section 6). Researchers must give us at least 45 days to review proposals before the research begins. If the research involves the collection of wildlife, the refuge must be given 60 days to review the proposal. Researchers must obtain all necessary scientific collecting or other appropriate State and Federal permits before starting the research. We will prioritize and approve proposals based on the need, benefit, compatibility, and funding required for the research. We may ask our regional refuge biologists, other Service divisions, State agencies, or academic experts to review and comment on proposals.

The criteria for evaluating a research proposal, outlined in the “Description of Use” section above, will be used when determining whether a proposed study will be approved on the refuge. If we approve the proposal, we will issue a special use permit. Special use permits will contain specific terms and conditions that the researcher(s) must follow relative to the activities planned (e.g., location, duration, seasonality, etc.) to ensure continued compatibility. All refuge rules and regulations must be followed unless alternatives are otherwise accepted in writing by refuge management. The permit will identify a schedule for annual progress reports and the submission of a final report or scientific paper.

The permit will also stipulate measures to minimize potential impacts (e.g., reduce the numbers of researchers entering an area, restrict research in specified areas) to include as part of the study design. For example, sensitive wildlife habitat areas would be avoided unless sufficient protection from research activities (i.e., disturbance, collection, capture, and handling) is implemented to limit the area and/or wildlife potentially

impacted by the proposed research. Where appropriate, some areas may be temporarily or seasonally closed so that research would be permitted when impacts to wildlife and habitat are less of a concern. Research activities will be modified to avoid harm to sensitive wildlife and habitat when unforeseen impacts arise.

Refuge staff will monitor researcher activities for potential impacts to the refuge and for compliance with conditions on the special use permit. The refuge manager may determine that previously approved research and special use permits be terminated due to observed impacts. The refuge manager will also have the ability to cancel a special use permit if the researcher is not in compliance with the stated conditions.

We will expect researchers to submit a final report to the refuge on completing their work. For long-term studies, we may also require interim progress reports. We also expect that research will be published in peer-reviewed publications. All reports, presentations, posters, articles or other publications will acknowledge the Refuge System and Great Bay Refuge as partners in the research. We have this requirement to ensure that the research community, partners, and the public understand that the research could not have been conducted without the refuge having been established, its operational support, and that of the Refuge System.

JUSTIFICATION:

This program as described is determined to be compatible. Any potential negative impacts of research activities on the resources of the refuge will be minimized by the restrictions included in the special use permit special conditions. In addition, the research study design and researcher activities will be regulated and monitored by refuge staff.

The Service encourages approved research to further our understanding of refuge natural resources and management. Research by non- Service personnel adds greatly to the information base for refuge managers to make proper decisions. Research conducted by non-Service personnel will contribute to the goals of the refuge and Refuge System, and will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager:

Greta D. Taylor
(Signature)

July 1, 2012
(Date)

CONCURRENCE:

Regional Chief:

Sean B. Kane
(Signature)

8/17/2012
(Date)

MANDATORY 10 YEAR RE-EVALUATION DATE:

8/17/2022

LITERATURE CITED:

U.S. Fish and Wildlife Service. 1985. Refuge Manual. Washington, D.C.: U.S. Government Printing Office.

ATTACHMENT I.

Great Bay National Wildlife Refuge Study Proposal Guidelines

A study proposal is a justification and description of the work to be done, and includes cost and time requirements. The proposals must be specific enough to serve as blueprints for the investigation. They must spell out in advance systematic plans for the investigation at a level of detail commensurate with the cost and scope of the project and the needs of management. Please submit proposals electronically as a Microsoft® Word® document or hard copy to the refuge manager.

The following list provides a general outline of first-order headings/sections for study proposals.

- Cover Page
- Table of Contents (for longer proposals)
- Abstract
- Statement of Issue
- Literature Summary
- Objectives/Hypotheses
- Study Area
- Methods and Procedures
- Quality Assurance/Quality Control
- Specimen Collections
- Deliverables
- Special Requirements, Concerns, Necessary Permits
- Literature Cited
- Peer Review
- Budget
- Personnel and Qualifications

Cover Page

The cover page must contain the following information.

- Title of proposal.
- Current date.
- Investigator(s)—name, title, organizational affiliation, address, telephone and fax numbers and e-mail address of all investigators or cooperators.
- Proposed starting date.
- Estimated completion date.
- Total funding support requested from the U.S. Fish and Wildlife Service.
- Signatures of principal investigator(s) and other appropriate institutional officials.

Abstract

The abstract should contain a short summary of the proposed study, including reference to major points in the sections “Statement of Issue,” “Objectives,” and “Methods and Procedures.”

Statement of Issue

Provide a clear precise summary of the problem to be addressed and the need for its solution. This section should include statements of the importance, justification, relevance, timeliness, generality, and contribution of the study. Describe how any products will be used, including any anticipated commercial use. What is the estimated probability of success of accomplishing the objective(s) within the proposed timeframe?

Literature Summary

This section should include a thorough but concise literature review of current and past research that pertains to the proposed research, especially any pertinent research conducted at the Great Bay National Wildlife Refuge. A discussion of relevant legislation, policies, and refuge planning and management history, goals, and objectives should also be included.

Objectives/Hypotheses

A very specific indication of the proposed outcomes of the project should be stated as objectives or hypotheses to be tested. Project objectives should be measurable. Provide a brief summary of what information will be provided at the end of the study and how it will be used in relation to the problem. These statements should flow logically from the statement of issue and directly address the management problem.

Establish data quality objectives in terms of precision, accuracy, representativeness, completeness, and comparability as a means of describing how good the data need to be to meet the project's objectives.

Study Area

Provide a detailed description of the geographic area(s) to be studied and include a clear map delineating the proposed study area(s) and showing specific locations where work will occur.

Methods and Procedures

This section should describe as precisely as possible, how the objectives will be met or how the hypotheses will be tested. Include detailed descriptions and justifications of the field and laboratory methodology, protocols, and instrumentation. Explain how each variable to be measured directly addresses the research objective/hypothesis. Describe the experimental design, population, sample size, and sampling approach (including procedures for sub-sampling). Summarize the statistical and other data analysis procedures to be used. List the response variables and tentative independent variables or covariates. Describe the experimental unit(s) for statistical analysis. Also include a detailed project time schedule that includes start, fieldwork, analysis, reporting, and completion dates.

Quality Assurance/Quality Control

Adequate quality assurance/quality control procedures help ensure that data and results are:

- Credible and not an artifact of sampling or recording errors.
- Of known quality.
- Able to stand up to external scientific scrutiny.
- Accompanied by detailed method documentation.

Describe the procedures to be used to ensure that data meet defined standards of quality and program requirements, errors are controlled in the field, laboratory, and office, and data are properly handled, documented, and archived. Describe the various steps (e.g., personnel training, calibration of equipment, data verification and validation) that will be used to identify and eliminate errors introduced during data collection (including observer bias), handling, and computer entry. Identify the percentage of data that will be checked at each step.

Specimen Collections

Clearly describe the kind (e.g., species), numbers, sizes, and locations of animals, plants, rocks, minerals, or other natural objects to be sampled, captured, or collected. Identify the reasons for collecting, the intended use of all the specimens to be collected, and the proposed disposition of collected specimens. For those specimens to be retained permanently as voucher specimens, identify the parties responsible for cataloging, preservation, and storage, as well as the proposed repository.

Deliverables

The proposal must indicate the number and specific format of hard and/or electronic media copies to be submitted for each deliverable. The number and format will reflect the needs of the refuge and the refuge manager. Indicate how many months after the project is initiated (or the actual anticipated date) that each deliverable will be submitted. Deliverables are to be submitted or presented to the refuge manager.

Deliverables that are required are as follows.

Reports and Publications

Describe what reports will be prepared and the timing of reports. Types of reports required in fulfillment of natural and social science study contracts or agreements include:

- (1) Progress report(s) (usually quarterly, semiannually, or annually; may be required).
- (2) Draft final and final report(s) (always required).

A final report must be submitted in addition to a thesis or dissertation (if applicable) and all other identified deliverables. Final and draft final reports should follow refuge guidelines (attachment I).

In addition, investigators are encouraged to publish the findings of their investigations in refereed professional, scientific publications and present findings at conferences and symposia. The refuge manager appreciates opportunities to review manuscripts in advance of their publication.

Data Files

Provide descriptions of any spatial (Geographic Information Systems [GIS]) and non-spatial data files that will be generated and submitted as part of the research. Non-spatial data must be entered onto CD-ROMs in Microsoft Access or Microsoft Excel. Spatial data, which includes Global Positioning System (GPS)-generated files, must be in a format compatible with the refuge's GIS system (ArcGIS 8 or 9, Arcview 3.3, or e00 format). All GIS data must be in UTM 19, NAD 83. A condition of the permit will be that the Service has access to, and may use, all GIS information generated for future mapping and management.

Metadata

For all non-spatial and spatial data sets or information products, documentation of information (metadata) describing the extent of data coverage and scale, the history of where, when, and why the data were collected, who collected the data, the methods used to collect, process, or modify/ transform the data, and a complete data dictionary must also be provided as final deliverables. Spatial metadata must conform to Service (FGDC) metadata standards.

Oral Presentations

Three types of oral briefings should be included: pre-study, annual, and closeout. These briefings will be presented to refuge staff and other appropriate individuals and cooperators. In addition, investigators should conduct periodic informal briefings with refuge staff throughout the study whenever an opportunity arises. During each refuge visit, researchers should provide verbal updates on project progress. Frequent dialogue between researchers and refuge staff is an essential element of a successful research project.

Specimens and Associated Project Documentation

A report on collection activities, specimen disposition, and the data derived from collections must be submitted to the refuge following refuge guidelines.

Other:

Researchers must provide the refuge manager with all of the following:

- (1) Copies of field notes/notebooks/datasheets.
- (2) Copies of raw data (in digital format), including GIS data, as well as analyzed data.
- (3) Copies of all photos (digital photos preferred), slides, videos, and films.
- (4) Copies of any reports, theses, dissertations, publications or other material (such as news articles) resulting from studies conducted on refuge.
- (5) Detailed protocols used in study.
- (6) Aerial photographs.

- (7) Maps/GIS data.
- (8) Interpretive brochures and exhibits.
- (9) Training sessions (where appropriate).
- (10) Survey forms.
- (11) Value-added software, software developed, and models.

Additional deliverables may be required of specific studies.

Special Requirements, Permits, and Concerns

Provide information on the following topics where applicable. Attach copies of any supporting documentation that will facilitate processing of your application.

Refuge Assistance

Describe any refuge assistance needed to complete the proposed study, such as use of equipment or facilities or assistance from refuge staff. It is important that all equipment, facilities, services, and logistical assistance expected to be provided by the Service be specifically identified in this section so all parties are in clear agreement before the study begins.

Ground Disturbance

Describe the type, location, area, depth, number, and distribution of expected ground-disturbing activities, such as soil pits, cores, or stakes. Describe plans for site restoration of significantly affected areas.

Proposals that entail ground disturbance may require an archaeological survey and special clearance prior to approval of the study. You can help reduce the extra time that may be required to process such a proposal by including identification of each ground disturbance area on a U.S. Geological Survey 7.5-minute topographic map.

Site Marking and/or Animal Marking

Identify the type, amount, color, size, and placement of any flagging, tags, or other markers needed for site or individual resource (e.g., trees) identification and location. Identify the length of time it is needed and who will be responsible for removing it. Identify the type, color, and placement of any tags placed on animals (see special use permit for stipulations on marking and handling of animals).

Access to Study Sites

Describe the proposed method and frequency of travel to and within the study site(s). Explain any need to enter restricted areas. Describe the duration, location, and number of participants, and approximate dates of site visits.

Use of Mechanized and Other Equipment

Describe any vehicles, boats, field equipment, markers, or supply caches by type, number, and location. You should explain the need to use these materials and how long they are to be left in the field.

Safety

Describe any known potentially hazardous activities, such as electro-fishing, scuba diving, whitewater boating, aircraft use, wilderness travel, and wildlife capture, handling, or immobilization.

Chemical Use

Identify chemicals and hazardous materials that you propose using within the refuge. Indicate the purpose, method of application, and amount to be used. Describe plans for storage, transfer, and disposal of these materials and describe steps to remediate accidental releases into the environment. Attach copies of Material Safety Data Sheets (MSDS).

Animal Welfare

If the study involves vertebrate animals, describe your protocol for any capture, holding, marking, tagging, tissue sampling, or other handling of these animals (including the training and qualifications of personnel relevant to animal handling and care). If your institutional animal welfare committee has reviewed your proposal, please include a photocopy of their recommendations. Describe alternatives considered, and outline procedures to be used to alleviate pain or distress. Include contingency plans to be implemented in the event of accidental injury to or death of the animal. Include State and Federal permits. Where appropriate, coordinate with and inform State natural resource agencies.

Literature Cited

List all reports and publications cited in the proposal.

Peer Review

Provide the names, titles, addresses, and telephone numbers of individuals with subject-area expertise who have reviewed the research proposal. If the reviewers are associated with the investigator's research institution or if the proposal was not reviewed, please provide the names, titles, addresses, and telephone numbers of three to five potential subject-area reviewers who are not associated with the investigator's institution. These individuals will be asked to provide reviews of the proposal, progress reports, and the draft final report.

Budget

The budget must reflect both funding and assistance that will be requested from the Service and the cooperator's contributions on an identified periodic (usually annual) basis.

Personnel Costs

Identify salary charges for principal investigator(s), research assistant(s), technician(s), clerical support, and others. Indicate period of involvement (hours or months) and pay rate charged for services. Be sure to include adequate time for data analysis and report writing and editing.

Fringe Benefits

Itemize fringe benefit rates and costs.

Travel

Provide separate estimates for fieldwork and meetings. Indicate number of trips, destinations, estimated miles of travel, mileage rate, air fares, days on travel, and daily lodging and meals charges. Vehicle mileage rate cannot exceed standard government mileage rates if Federal funds are to be used. Charges for lodging and meals are not to exceed the maximum daily rates set for the locality by the Federal Government (contact Great Bay Refuge for appropriate rates).

Equipment

Itemize all equipment to be purchased or rented and provide a brief justification for each item costing more than \$1,000. Be sure to include any computer-related costs. For proposals funded under a Service agreement or contract, the refuge reserves the right to transfer the title of purchased equipment with unit cost of \$1,000 or more to the Federal Government following completion of the study. These items should be included as deliverables.

Supplies and Materials

Purchases and rentals under \$1,000 should be itemized as much as is reasonable.

Subcontract or Consultant Charges

All such work must be supported by a subcontractor's proposal also in accordance with these guidelines.

Specimen Collections

Identify funding requirements for the cataloging, preservation, storage, and analyses of any collected specimens that will be permanently retained.

Printing and Copying

Include costs for preparing and printing the required number of copies of progress reports, the draft final report, and the final report. In general, a minimum of two copies of progress reports (usually due quarterly, semiannually, or as specified in agreement), the draft final report, and the final report are required.

Indirect Charges

Identify the indirect cost (overhead) rate and charges and the budget items to which the rate is applicable.

Cooperator's Contributions

Show any contributing share of direct or indirect costs, facilities, and equipment by the cooperating research institution.

Outside Funding

List any outside funding sources and amounts.

Personnel and Qualifications

List the personnel who will work on the project and indicate their qualifications, experience, and pertinent publications. Identify the responsibilities of each individual and the amount of time each will devote. A full vita or resume for each principal investigator and any consultants should be included here.

Interim Final Report Guidelines

Draft final and final reports should follow Journal of Wildlife Management format, and should include the following sections.

- Title Page
- Abstract
- Introduction/Problem Statement
- Study Area
- Methods (including statistical analyses)
- Results
- Discussion
- Management Implications
- Management Recommendations
- Literature Cited

FINDING OF APPROPRIATENESS OF A REFUGE USE**Refuge Name:** Great Bay National Wildlife Refuge**Use:** Walking, Hiking, Cross Country Skiing, and Snowshoeing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _____ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate _____ **Appropriate** ✓

Refuge Manager: Gretchen W. Taylor Date: 7/1/2012

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: Sharon M. Murre Date: 8/2/2012

A compatibility determination is required before the use may be allowed.

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Bay National Wildlife Refuge

Use: Walking, Hiking, Cross Country Skiing, and Snowshoeing

NARRATIVE:

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, we are evaluating all non-priority public uses for Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge). Walking, hiking, cross-country skiing, and snowshoeing are not explicitly identified as a priority public uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. However, we consider these uses appropriate as they allow refuge visitors the least impacting mode of transportation to participate in wildlife observation, photography, and environmental education, which are priority public uses.

The presence of people walking, hiking, skiing, and snowshoeing could result in some disturbance to wildlife located in habitats adjacent to the trail system. Recreational trail use has been shown to cause disturbance to wildlife up to 330 feet (100 meters) from trails (Taylor and Knight 2003). The use of the trails could lead to soil compaction causing some tree roots to be exposed if they are close to the ground surface. The boardwalk and refuge signs encourage visitors to stay on the trail to minimize disturbance to wildlife and surrounding vegetation. Other impacts in violation of refuge regulations such as littering, picking/collecting vegetation or illegal take of wildlife could occur. Refuge staff believe that with the proper management, walking, hiking, skiing, and snowshoeing will not result in any short- or long-term impacts that will adversely affect the purpose of the refuge or the mission of the National Wildlife Refuge System.

To minimize wildlife disturbance and environmental damage, refuge visitors are required to remain on designated trails. Trails are monitored and maintained by the refuge volunteers and refuge staff. One trail is almost entirely boardwalked and is wheelchair accessible. The other trail is predominantly of earth and some gravel. The trail surfaces are maintained each year as necessary.

One of the goals of the National Wildlife Refuge System is to provide high-quality wildlife viewing opportunities for the public. Allowing the use of the trail system by persons engaging in walking, hiking, cross country skiing, and snowshoeing will provide visitors the chance to view wildlife. This activity promotes an appreciation for the continued conservation and protection of wildlife and habitat. Walking, hiking, cross country skiing, and snowshoeing would not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

LITERATURE CITED:

Taylor, A. R., and R. L. Knight. 2003. Wildlife Responses to Recreation and Associated Visitor Perceptions. *Ecological Applications*, 13 (4), 2003, pp. 951-963.

COMPATIBILITY DETERMINATION

USE:

Walking, Hiking, Cross Country Skiing, and Snowshoeing

REFUGE NAME:

Great Bay National Wildlife Refuge

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Public Law 102-154, Section 319(d) Department of the Interior and Related Agencies Appropriations Bill, 1992.

REFUGE PURPOSE(S):

Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge) was established:

- To encourage the natural diversity of plant, fish, and wildlife species within the refuge, and to provide for their conservation and management.
- To protect species listed as endangered or threatened or identified as candidates pursuant to the Endangered Species Act of 1973.
- To preserve and enhance the water quality of aquatic habitat within the refuge.
- To fulfill the international treaty obligations of the United States relating to fish and wildlife.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”—National Wildlife Refuge System Improvement Act of 1997 (Public Law 105–57; 111 Stat. 1282)

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The uses are walking, hiking, cross country skiing, and snowshoeing. These are not priority public uses of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). However, refuge staff believe by allowing these activities, that the participants will be positively exposed to the refuge and the Refuge System. This exposure may lead to a better understanding of the importance of the Refuge System to the American people. The aforementioned activities have occurred on the refuge for many years. Also, many people engaged in priority public uses at Great Bay Refuge, such as hunting, wildlife observation and photography, and interpretation, access the refuge and its public use facilities through these uses.

(b) Where would the use be conducted?

These uses will primarily be conducted along the two public use trails (Ferry Way Trail and Upper Peverly Trail). Occasional refuge-organized programs or events may also occur in portions of the refuge normally closed to the public.

(c) When would the use be conducted?

We will allow these uses daily, year-round, from sunrise to sunset, unless a conflict with a trail maintenance activity or an extenuating circumstance necessitates our deviating from normal operating hours. Such circumstances include, but are not limited to, the 2-day controlled deer hunt, and closures for snow and ice storms or other events affecting human safety.

(d) How would the use be conducted?

We will allow these uses on the 2-mile Ferry Way Trail and the 0.5-mile Upper Peverly Trail. These uses afford pedestrian access for wildlife observation and other priority public uses, as noted below in section (e). To support these activities, there is currently a map at the information kiosk at the public parking area where both trails originate, as well a general information brochure that include a map showing the trails. This information is also available on the refuge Web site.

Visitors are required to remain on the designated trail system to minimize environmental damage and prevent accidents. Collecting of any kind is not allowed, nor is disturbing or feeding wildlife. Trails are monitored and maintained by refuge volunteers to provide a safe and quality visitor experience. The trail surfaces are maintained each year, as necessary.

Refuge visitors may use bicycles to access the refuge, but bicycles are not allowed on any of the refuge trails. Similarly, jogging is also not allowed on refuge trails, as indicated in the finding of appropriateness for jogging.

(e) Why is this use being proposed?

These uses support wildlife observation and other priority public uses on Great Bay and most national wildlife refuges. Refuge staff believe, by allowing these activities, that the participants will be positively exposed to the refuge and the Refuge System. This exposure may lead to a better understanding of the importance of the Refuge System to the American people and to their support for refuge acquisition and management.

AVAILABILITY OF RESOURCES:

The resources necessary to provide and administer this use are available within current and anticipated refuge budgets. Trail maintenance is provided by refuge volunteers.

Visitor Services Specialist (GS-12)—5 days/year = \$2,375

Outdoor Recreation Planner (GS-9)—10 days/year = \$4,000

Law Enforcement (GS-9)—5 days/year = \$2,000

ANTICIPATED IMPACTS OF THE USE:

The presence of people walking, hiking, skiing, and snowshoeing could result in some disturbance to wildlife located in habitats adjacent to the trail system.

Direct Effects

Direct impacts are those where the activity has an immediate effect on wildlife and/or habitats.

Trail use may lead to trampling of vegetation adjacent to the trail or compaction of soil and leaf litter. These impacts are generally localized to areas adjacent to trails or areas of frequent off-trail use. Impacts of off-trail use can include a reduction in the density of plants near trails, soil compaction, increased erosion,

and damage to, or killing of, plants (Colorado State Parks 1998). To reduce the potential for these types of disturbance, markers and refuge boundary signs encourage trail users to stay on the trail to minimize effects on surrounding vegetation.

The presence of humans walking along trails can directly disturb migratory birds and other wildlife species. Wildlife often respond to human presence by departing from the disturbed site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), using of sub-optimal habitat or non-preferred habitat (Erwin 1980, Williams and Forbes 1980), altering their behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increasing their energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Human disturbances can also decrease reproductive success by causing nest abandonment, decline in parental care, altering feeding schedules, and other stresses (Colorado State Parks 1998). It can cause shifts in habitat use, lead to abandonment of habitat, and increase energy demands in affected wildlife (Knight and Cole 1991). Hammitt and Cole (1998) conclude that the frequent presence of humans in natural areas can dramatically change the behavior of some wildlife species.

Wildlife responses to human disturbance vary by species, and by the type, level, frequency, duration, and time of year of the human use. For example generalist species, which thrive in disturbed areas, are often more abundant along trails than specialist species that are more sensitive to human disturbance (Colorado State Parks 1998). Adverse impacts also tend to increase as user groups increase in size (Beale and Monaghan 2004).

The impact of walking along trails can have impacts even outside of the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. They also found that nest predation was also greater near trails (Miller et al. 1998).

Indirect Effects

When people move from one area to another, they can be vectors for the seeds or other propagules of invasive plants. Once established, invasive plants can outcompete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plants establishing themselves will always be an issue that requires monitoring.

Cumulative Effects

Effects that are minor when we consider them separately but may be important when we consider them collectively are cumulative effects. The principal concerns are repeated disturbances of birds that are nesting, foraging, or resting. Opening refuge land to public use can often result in litter, vandalism, or other illegal activities.

Our observations and knowledge of the areas involved provide no evidence that, cumulatively, these proposed wildlife-dependent uses will have an unacceptable effect on the wildlife resource. Although we do not expect a substantial increase in the cumulative effects of public use in the near term, it will be important for refuge staff to monitor public use and respond, if necessary, to conserve the high-quality wildlife resources on the refuge.

We expect no additional effects from wildlife observation, wildlife photography, environmental education or interpretation. Refuge staff will monitor and evaluate the effects of public use in collaboration with volunteers to discern and respond to unacceptable impacts on wildlife or habitats.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Great Bay Refuge, this compatibility determination underwent extensive public review, including a comment period of 39 days that followed the release of the draft Comprehensive Conservation Plan and Environmental Assessment.

DETERMINATION (CHECK ONE BELOW):

- ☐ Use is not compatible.
- ☒ Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- To minimize or avoid negative impacts to wildlife and habitat.
- Harassment, baiting, playback tapes, or electronic calls are not allowable methods to attract wildlife for observation or photography (this does not necessarily apply to management activities, e.g., approved research or surveys, which are evaluated on a case-by-case basis).
- Collecting of any kind is prohibited, as described in the finding of appropriateness for berry picking, mushroom collecting, and flower picking (this does not necessarily apply to management activities, e.g., approved research or surveys, which are evaluated on a case-by-case basis).
- Stay on trails unless authorized with permit or attending a refuge program.

JUSTIFICATION:

The Service and the National Wildlife Refuge System maintain goals of providing opportunities to view wildlife. Allowing the use of the trail system by persons engaging in walking, hiking, cross country skiing, and snowshoeing will provide visitors the chance to view wildlife. This activity promotes an appreciation for the continued conservation and protection of wildlife and habitat. Walking, hiking, cross country skiing, and snowshoeing would not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager: Adam W. Taylor July 1, 2012
(Signature) (Date)

CONCURRENCE:

Regional Chief: Scott B. Kahn 8/17/2012
(Signature) (Date)

MANDATORY 10 YEAR RE-EVALUATION DATE:

8/17/2022

LITERATURE CITED:

- Beale, C. M., and P. Monaghan. 2004. Human disturbance: people as predation-free predators? *Journal of Applied Ecology* 41:335-343.
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- Havera, S. P., L. R. Boens, M. M. Georgi, and R. T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildlife Society Bulletin* 20:290-298.
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- Knight, R.L. and D. N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Trans. 56th N.A. Wildl. & Nat. Res. Conf.* Pages 238-247.
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- Miller, S.G., R.L. Knight, and C.K. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications* 8:162-169.
- Miller, S.G., R.L. Knight, and C.K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29(1): 124-132.
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COMPATIBILITY DETERMINATION

USE:

Wildlife Observation and Photography, Environmental Education, and Interpretation

REFUGE NAME:

Great Bay National Wildlife Refuge

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Public Law 102-154, Section 319(d) Department of the Interior and Related Agencies Appropriations Bill, 1992.

REFUGE PURPOSE(S):

Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge) was established to:

- Encourage the natural diversity of plant, fish, and wildlife species within the refuge, and to provide for their conservation and management.
- Protect species listed as endangered or threatened or identified as candidates pursuant to the Endangered Species Act of 1973.
- Preserve and enhance the water quality of aquatic habitat within the refuge.
- Fulfill the international treaty obligations of the United States relating to fish and wildlife.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”—National Wildlife Refuge System Improvement Act of 1997 (Public Law 105–57; 111 Stat. 1282)

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The uses are wildlife observation and photography, environmental education, and interpretation. They are priority public uses of the National Wildlife Refuge System (Refuge System), under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997.

(b) Where would the uses be conducted?

These uses will primarily be conducted along the two public use trails (Ferry Way Trail and Upper Peverly Trail). Occasional refuge-organized programs or events may also occur in portions of the refuge normally closed to the public.

This CCP will enhance opportunities by investigating the possibility of a trail on the Fabyan Point property with an observation platform; other possible observation platforms along the Ferry Way Trail; a spur trail off the Refuge entrance road connecting to the Ferry Way Trail, and converting the Upper Peverly Trail to boardwalk to make it wheelchair accessible. The refuge will also investigate new partnerships with area schools to enhance outreach and education efforts on the refuge.

(c) When would the uses be conducted?

These uses will be allowed daily, year-round, from sunrise to sunset, unless a conflict with a trail maintenance activity or an extenuating circumstance necessitates our deviating from those procedures. Examples are the 2-day controlled deer hunt, and closures for snow and ice storms or other events affecting human safety.

(d) How would the uses be conducted?

We will allow wildlife observation and photography, environmental education and interpretation on the 2-mile Ferry Way Trail and the 0.5-mile Upper Peverly Trail. To support these activities, there is currently a map at the information kiosk at the public parking area where both trails originate, as well a general information brochure that include a map showing the trails. This information is also available on the refuge Web site. Horseback riding is not allowed on the refuge. Motorized vehicles and bicycles are not allowed beyond the public entrance road and parking lot. Access on trails is restricted to pedestrians only (except visitors using wheelchairs). Most visitors engaged in these uses are either walking, hiking, cross country skiing, or snowshoeing on refuge trails. The refuge also offers chaperoned, interpretive bus tours of the refuge up to 10 times a year. During these trips, refuge staff and/or volunteers drive a group of individuals by bus to various areas of the refuge and present interpretive and educational information. These bus tours occur on public and refuge administration roads; they do not involve driving offroad.

(e) Why are these uses being proposed?

The Refuge System Improvement Act defines wildlife observation, photography, environmental education and interpretation as priority public uses that, if compatible, are to receive our enhanced consideration over other general public uses. Authorizing these uses will produce better-informed public advocates for Service programs.

These uses will provide opportunities for visitors to observe and learn about wildlife and wild lands at their own pace in an unstructured environment, and observe wildlife in their natural habitats firsthand. They will provide visitors with compatible educational and recreational opportunities to enjoy refuge resources and gain better understanding and appreciation of wildlife, wild lands ecology, the relationships of plant and animal populations in an ecosystem, and wildlife management. They will enhance public understanding of ecological concepts, enable the public to better understand the problems facing our wildlife and wild lands resources, help them realize what effect the public has on wildlife resources, learn about the Service's role in conservation, and better understand the biological facts upon which we base Service management programs.

Professional and amateur photographers alike will gain opportunities to photograph wildlife in its natural habitat (see separate finding of appropriateness and compatibility determination for "Commercial Wildlife and Nature Photography"). Those opportunities obviously will increase the publicity and advocacy of Service programs. These uses will provide wholesome, safe, outdoor recreation in a scenic setting, and entice those who come strictly for recreational enjoyment to participate in the educational facets of our public use program and become advocates for the refuge and the Service.

AVAILABILITY OF RESOURCES:

Great Bay Refuge is an unstaffed satellite refuge administered by Parker River Refuge. No additional equipment, facilities, or improvements will be necessary to allow research by non-Service personnel. Staff from Parker River Refuge would be required to review research proposals and oversee permitted projects. We expect that conducting these activities will require less than 10 percent of a work-year for one staff member.

Anticipated costs are:

Senior Visitor Services Specialist (GS-12) —6 days/year = \$2,850

Refuge Manager (GS-13)—5 days/year = \$2,500

Outdoor Recreation Planner (GS-9)—5 days/year = \$2,000

Law Enforcement Officer (GS-9) (enforcement patrols) 6 days/year = \$2,400

To support these uses, we plan to construct the following new facilities. Estimated costs for these facilities are partly derived from the Service's Region 5 Construction and Rehabilitation Cost Estimating Guide.

Upper Peverly Trail boardwalk	\$40,000
Ferry Way Trail observation platforms	\$10,000
Fabyan Point Trail and observation platform	\$55,000

ANTICIPATED IMPACTS OF THE USE:

These public uses can directly and indirectly impact wildlife and their habitats on the refuge. Visitors engaged in these uses are usually walking or taking photographs along existing refuge trails.

Direct Effects

Direct impacts are those where the activity has an immediate effect on wildlife and/or habitats.

Trail use may lead to trampling of vegetation adjacent to the trail or compaction of soil and leaf litter. These impacts are generally localized to areas adjacent to trails or areas of frequent off-trail use. Impacts of off-trail use can include a reduction in the density of plants near trails, soil compaction, increased erosion, and damage or killing of plants (Colorado State Parks 1998). To reduce the potential for these types of disturbance, markers and refuge boundary signs encourage trail users to stay on the trail to minimize effects on surrounding vegetation.

The presence of humans walking along trails can directly disturb migratory birds and other wildlife species. Wildlife often respond to human presence by departing from the disturbed site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), using of sub-optimal habitat or non-preferred habitat (Erwin 1980, Williams and Forbes 1980), altering their behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increasing their energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Human disturbances can also decrease reproductive success by causing nest abandonment, decline in parental care, altering feeding schedules, and other stresses (Colorado State Parks 1998). It can cause shifts in habitat use, lead to abandonment of habitat, and increase energy demands in affected wildlife (Knight and Cole 1991). Hammitt and Cole (1998) conclude that the frequent presence of humans in natural areas can dramatically change the behavior of some wildlife species.

Wildlife responses to human disturbance vary by species, and by the type, level, frequency, duration, and time of year of the human use. For example generalist species, which thrive in disturbed areas, are often more abundant along trails than specialist species that are more sensitive to human disturbance (Colorado State Parks 1998). Adverse impacts also tend to increase as user groups increase in size (Beale and Monaghan 2004).

The impact of walking along trails can have impacts even outside of the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. They also found that nest predation was also greater near trails (Miller et. al 1998).

Indirect Effects

When people move from one area to another, they can be vectors for the seeds or other propagules of invasive plants. Once established, invasive plants can outcompete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plants establishing themselves will always be an issue that requires monitoring.

Cumulative Effects

Effects that are minor when we consider them separately but may be important when we consider them collectively are cumulative effects. The principal concerns are repeated disturbances of birds that are nesting, foraging, or resting. Opening refuge land to public use can often result in litter, vandalism, or other illegal activities.

Our observations and knowledge of the areas involved provide no evidence that, cumulatively, these proposed wildlife-dependent uses will have an unacceptable effect on the wildlife resource. Although we do not expect a substantial increase in the cumulative effects of public use in the near term, it will be important for refuge staff to monitor public use and respond, if necessary, to conserve the high-quality wildlife resources on the refuge.

We expect no additional effects from wildlife observation, wildlife photography, environmental education or interpretation. Refuge staff will monitor and evaluate the effects of public use in collaboration with volunteers to discern and respond to unacceptable impacts on wildlife or habitats.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Great Bay Refuge, this compatibility determination underwent extensive public review, including a comment period of 39 days that followed the release of the draft Comprehensive Conservation Plan and Environmental Assessment.

DETERMINATION (CHECK ONE BELOW):

- ☐ Use is not compatible.
- ☒ Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

We will monitor public use on the trail at various times of the year to assess the disturbance of wildlife. Wildlife observation, photography, environmental education, and interpretation will only be allowed on the refuge from sunrise to sunset on trails open to the public.

Groups of 10 or more people must request a special use permit from the refuge manager. Each request will then be evaluated for impacts to the refuge. Using professional judgment, as long as there is no significant negative impact to natural resources or visitor services, or violation of refuge regulations, a special use permit will be issued outlining the framework in which this use can be conducted.

JUSTIFICATION:

Wildlife observation and photography, environmental education, and interpretation are priority wildlife-dependent uses, through which the public can develop an appreciation for fish and wildlife [Executive Order 12996, March 25, 1996, and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997].

Service policy is to provide expanded opportunities for those uses when they are compatible and consistent with sound fish and wildlife management, and ensure that they receive enhanced consideration in refuge planning and management. Allowing them on the refuge will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager: Greta W. Taylor (Signature) July 1, 2012 (Date)

CONCURRENCE:

Regional Chief: Sam B. Kern (Signature) 8/17/2012 (Date)

MANDATORY 15 YEAR RE-EVALUATION DATE:

8/17/2027

LITERATURE CITED:

- Beale, C. M., and P. Monaghan. 2004. Human disturbance: people as predation-free predators? *Journal of Applied Ecology* 41:335-343.
- Belanger, L., and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management*. 54:36-41.
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- Korschen, C. E., L. S. George, and W. L. Green. 1985. Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin* 13:290-296.
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- Miller, S.G., R.L. Knight, and C.K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29(1): 124-132.
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- Ward, D. H., and R. A. Stehn. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service. Anchorage, Alaska. 193 pp.
- Williams, G. J., and E. Forbes. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl*. 31:151-157.

COMPATIBILITY DETERMINATION

USE:

Deer Hunting

REFUGE NAME:

Great Bay National Wildlife Refuge

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Public Law 102-154, Section 319(d) Department of the Interior and Related Agencies Appropriations Bill, 1992.

REFUGE PURPOSE(S):

Great Bay National Wildlife Refuge (Great Bay Refuge, the refuge) was established to:

- Encourage the natural diversity of plant, fish, and wildlife species within the refuge, and to provide for their conservation and management.
- Protect species listed as endangered or threatened or identified as candidates pursuant to the Endangered Species Act of 1973.
- Preserve and enhance the water quality of aquatic habitat within the refuge.
- Fulfill the international treaty obligations of the United States relating to fish and wildlife.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”—National Wildlife Refuge System Improvement Act of 1997 (Public Law 105–57; 111 Stat. 1282)

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The use is white-tailed deer hunting. Hunting is a priority public use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

(b) Where would the use be conducted?

Firearm (shotgun) deer hunting will be allowed throughout the entire refuge excluding Fabyan Point, the enclosed area of the former Weapons Storage Area, and established safety zones.

(c) When would the use be conducted?

The firearm deer hunt will be conducted on the first weekend of the State firearm season for Wildlife Management Unit M, which includes the refuge.

(d) How would the use be conducted?

We will continue to conduct the use according to State and Federal regulations. Federal regulations in 50 Code of Federal Regulations pertaining to the National Wildlife Refuge System Administration Act, as well as existing, refuge-specific regulations will apply. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further relax hunting regulations up to the limit of State regulations. We would restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

All persons participating in the refuge hunt must hold a valid State hunting license, and then obtain a refuge hunting permit. Individuals hunting on the refuge are subject to the inspection of permits, licenses, hunting equipment, game bagged, and vehicles and their contents by Federal and State officers.

Unarmed hunters may scout the appropriate areas open to hunting the first Wednesday of November to the first Saturday of November for the firearm deer hunt. All hunters must possess the appropriate permit while scouting.

“No hunting zones” include, but may not be limited to, the fenced area of the former Weapons Storage Area, Fabyan Point property, administrative areas, and wildlife sensitive areas.

Vehicle access will only be allowed as indicated on hunt maps during the 2-day firearm deer hunt. During scouting, vehicles will park in the visitor parking lot and scout on foot.

Temporary, portable tree stands and ground blinds are acceptable and must be removed daily. Permanent trees stands and ground blinds are prohibited. Hunters cannot use screw-in steps, nails, spikes, wires, or bolts as climbing or hanging devices to attach a stand to a tree.

Prohibited Uses

- Using illuminating devices.
- Distributing bait, salt, or attractant, or hunting over a baited area.
- Being the under the influence, or in possession, of alcoholic beverages while hunting.
- Possessing axes, hatchets, saws, nails, tacks, paint, or flagging for the marking of trees and shrubs.
- Camping, overnight parking, open fires, dogs, or littering.

Deer may be hunted with shotguns capable of firing a single projectile (slug) during the 2-day firearm hunt in November.

A pre-season lottery will be held, with 20 permits issued per day for the 2-day firearm hunt. Selected hunters will be required to submit the required fee prior to being issued the permit.

Harvested deer must be tagged at the refuge office.

(e) Why is this use being proposed?

Hunting is one of the priority public uses outlined in the Refuge System Improvement Act of 1997. The Service supports and encourages priority uses when they are compatible on refuge lands. Hunting is used in some instances to manage wildlife populations, and is a traditional form of wildlife-oriented recreation that many national wildlife refuges can accommodate. The refuge hunt has been ongoing since 1996 and has been very successful and popular.

According to the New Hampshire Fish and Game Department (NHFG), deer populations in the more urban Wildlife Management Unit M, exceed the established population target for this unit. Unit M is a total of 534 square miles, of which the refuge comprises less than one-half of 1 percent. NHFG's objective for this unit is to reduce the adult male deer population by approximately 29 percent from the current 757 to 535. The refuge's hunt incrementally helps contribute to this goal. In fall 2011, 22 deer were harvested from the refuge.

AVAILABILITY OF RESOURCES:

Great Bay Refuge is currently unstaffed. NHFG personnel assist the refuge with the application process by receiving and entering applications into a database, and then randomly selecting the required number of individuals and 10 alternates for each day. NHFG then provides the refuge manager with that information. Parker River Refuge staff then process all mailings and permits for selected hunters and staff Great Bay Refuge during the 2-day hunt. Due to the short timeframe of the hunt (2 weekend days) adequate staff are available from Parker River Refuge to implement the hunt at this time.

Anticipated costs are:

Visitor Services Specialist (GS-12) —3 days/year= \$1,425

Deputy Refuge Manager (GS-12)—2 days/year= \$950

Biological Technician (GS-5) —2 days/year = \$300

Refuge Manager (GS-13) —5 days/year = \$2,500

Law Enforcement Officer (GS-9) (enforcement patrols) 5 days/year= \$2,000

ANTICIPATED IMPACTS OF THE USE:

Soils and Vegetation Impacts

The entire refuge would be open to hunters, except safety zones, Fabyan Point, and the enclosed portion of the former Weapons Storage Area. Hunters traveling off-trail may trample vegetation and introduce invasive plant propagules. The short-term impacts of trampling vegetation include damage and killing of individual plants, whereas long-term impacts include soil compaction (Kuss 1986, Roovers et al. 2004). However, due to the low number of hunters anticipated annually and the dispersed nature of hunting, we predict that these impacts will be minor. White-tailed deer foraging can also have negative impacts on native vegetation, including reduced forest regeneration and changes in plant composition and structure (Tilghman 1989, Augustine and Jordon 1998). The refuge's hunt program may contribute to reducing these vegetation impacts by reducing the local deer population.

Wildlife Impacts

The use does have some disturbance to other native wildlife present on the refuge; however, keeping the deer population at a level that refuge habitat can support prevents direct impacts to other wildlife and habitat present.

Impacts on other Public Uses

During the 2-day fall hunt, the refuge is closed to all public users, except permitted deer hunters. The hunt occurs during a time when few visitors are coming to the refuge for uses other than hunting. During this time of year, weather conditions also tend to reduce visitation. Also, at this time of year not much wildlife activity is occurring, therefore, there is less interest in wildlife observation and photography. Based on past seasonal visitation, we estimate that less than 100 people would be displaced during the 2-day hunt. However, it is also important to note, that many refuge visitors support hunting and would not upset by the closure.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Great Bay Refuge, this compatibility determination underwent extensive public review, including a comment period of 39 days that followed the release of the draft Comprehensive Conservation Plan and Environmental Assessment.

DETERMINATION (CHECK ONE BELOW):

- ☐ Use is not compatible.
- ☒ Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

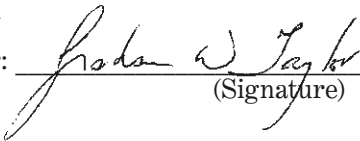
To minimize or avoid negative impacts to wildlife and habitat:

- The application process, including random selection of hunters, will be assisted by NHFG.
- Twenty permits will be available for each of the 2 days.
- Firearms will be restricted to shotgun only with a single projectile (slug).

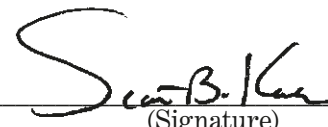
JUSTIFICATION:

The Service and the Refuge System maintain goals of providing wildlife-dependent priority public uses including hunting. The white-tailed deer hunt has been conducted since 1996 and is a traditional and established program on the refuge. Annual adjustments may be made to ensure continued compatibility.

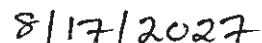
SIGNATURE:

Refuge Manager:  (Signature)  (Date)

CONCURRENCE:

Regional Chief:  (Signature)  (Date)

MANDATORY 15 YEAR RE-EVALUATION DATE:



LITERATURE CITED:

- Augustine, D.J. and P.A. Jordon. 1998. Predictors of white-tailed deer grazing intensity in fragmented deciduous forests. *Journal of Wildlife Management* 62(3): 1076-1085.
- Kuss, F. R. 1986. A review of major factors influencing plant responses to recreation impacts. *Environmental Management*, 10:638-650.
- Roovers, P., K Verheyen, M. Hermy, and H. Gulinck. 2004. Experimental trampling and vegetation recovery in some forest and heathland communities. *Applied Vegetation Science* 7:111-118.
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COMPATIBILITY DETERMINATION

USE:

Waterfowl Hunting

REFUGE NAME:

Great Bay National Wildlife Refuge

DATE ESTABLISHED:

August 11, 1992

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Public Law 102-154, Section 319(d) Department of the Interior and Related Agencies Appropriations Bill, 1992.

PURPOSE(S) FOR WHICH ESTABLISHED:

The Great Bay National Wildlife Refuge (Great Bay Refuge) was established:

- To encourage the natural diversity of plant, fish, and wildlife species within the refuge, and to provide for their conservation and management.
- To protect species listed as endangered or threatened or identified as candidates pursuant to the Endangered Species Act of 1973.
- To preserve and enhance the water quality of aquatic habitat within the refuge.
- To fulfill the international treaty obligations of the United States relating to fish and wildlife.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” — National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act) (Public Law 105–57; 111 Stat. 1282)

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The use is waterfowl (geese and duck) hunting and is a priority public use of the National Wildlife Refuge System, under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997.

(b) Where would the use be conducted?

Waterfowl hunting will be allowed along the immediate tidal shoreline of Great Bay Refuge, except along the refuge shoreline of Fabyan Point. Along certain stretches of the refuge boundary, such as rocky shoreline and tidal marsh habitat, the refuge boundary signs are posted just interior of the actual refuge boundary because

the signs need to be solidly placed. The posted signs define the refuge's waterfowl hunt area. Waterfowl hunting is only allowed up to the refuge's boundary signs and hunters may not retrieve birds beyond refuge signs from the shoreline. Access for waterfowl hunting is by boat launched from off-refuge only; overland access is prohibited. Based on habitat conditions, all the refuge shoreline (e.g., tidal mudflats and rocky or forested shoreline) and observations of hunter use and distribution, most of waterfowl hunting on the refuge occurs in the tidal marsh in Herod's Cove.

(c) When would the use be conducted?

Waterfowl hunting will be allowed during the New Hampshire waterfowl seasons in accordance with Federal and State regulations. All hunting hours will follow New Hampshire State regulations.

(d) How would the use be conducted?

We will continue to conduct the use according to State and Federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, specific refuge regulations (50 CFR § 32.48) will apply. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations up to the limits of State regulations. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

All persons hunting waterfowl must hold a valid State hunting license; we do not require a separate Federal permit for waterfowl hunting. Individuals hunting on the refuge are subject to the inspection of licenses, hunting equipment, game bagged, boats, and their content by Federal and/or State officers. Hunters may only use approved nontoxic shot.

(e) Why is the use being proposed?

Hunting is one of the priority uses outlined in the Refuge Improvement Act of 1997. The Service supports and encourages priority uses when they are appropriate and compatible on national wildlife refuge lands. Hunting is used in some instances to manage wildlife populations. It is also a traditional form of wildlife-oriented recreation that many national wildlife refuges can accommodate. When managed appropriately, hunting can instill a unique appreciation of wildlife, their behavior, and their habitat needs.

AVAILABILITY OF RESOURCES:

The refuge has adequate funds to administer the waterfowl hunt program and the following breakdown shows the estimated amount of funds needed to annually manage the program:

Annual costs to administer waterfowl hunting:

Signs	\$100
Enforcement	\$500
Total Annual Cost	\$600

ANTICIPATED IMPACTS:

The following are anticipated direct, indirect, and cumulative impacts from waterfowl hunting on the refuge.

Effects on Wildlife Species

Waterfowl hunting and associated hunter activities (i.e., hunters boating along the shoreline, hunters retrieving waterfowl from refuge shoreline) likely will cause some minimal, short-term disturbance to target waterfowl species. Potential impacts to target waterfowl species include direct mortality or injury and indirect changes in behavior (Cline et al. 2007). Waterfowl hunting may cause waterfowl species to become more skittish and prone to disturbance (Morton 1995), reduce the amount of time that they spend feeding or resting, and may alter their habitat use (Raveling 1979, Thomas 1983, Owens 1977, White-Robinson 1982, Madsen 1985, Bartelt 1987). At Great Bay Refuge, we expect the impacts to target waterfowl species to be short-term and negligible because very few individuals (e.g., five or less persons) hunt waterfowl on the refuge annually and relatively few waterfowl are harvested each year (e.g., estimated to be less than 50 waterfowl harvested annually).

Other nontarget species that occur along the refuge shoreline may also be disturbed by the presence of waterfowl hunters who are primarily hunting from boats. Nontarget wildlife responses to recreationalists, such as hunters, can include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Again, we expect these impacts to be negligible and short-term because very few individuals waterfowl hunt on the refuge each year, waterfowl hunting is limited to designated areas only, access is only by boat launched from outside of the refuge, and waterfowl hunting occurs in the fall and winter outside of the sensitive breeding season for most species.

The use of toxic shot for hunting can also cause mortality or injury to nontarget wildlife. In order to prevent these impacts, we only allow the use of nontoxic (e.g., lead-free) shot for waterfowl hunting on the refuge.

Effects on Vegetation and Soils

We anticipate essentially no impacts to refuge vegetation and soils from waterfowl hunting because access is only by boat launched from outside of the refuge. Sometimes waterfowl hunters may get out of boats and come onto the refuge in front of refuge signs, mostly to retrieve birds in the tidal marsh. However, as this occurs very infrequently based on observations and only for very short amounts of time, we do not anticipate any negative impacts. In addition, hunting season occurs during the time of year when vegetation growth is slowed or dormant. In addition, the areas where waterfowl hunters may come onto the refuge shoreline is mostly rocky shoreline, where soil and vegetation is absent, or tidal marsh at low tide.

Effects on Water Quality and Aquatic Resources

The use of boats, particularly motorized boats, for waterfowl hunting may cause adverse impacts on water quality and aquatic resources. Potential impacts include direct impacts, such as aquatic species mortality from waves and propeller action, and indirect impacts, including increased stress levels, increased water turbidity, loss of food sources, and the dislodging of aquatic species eggs and larvae from their substrate (Lewin et al. 2006). Motorized boats can also disturb wildlife by creating loud noises, which may interfere with hearing and release toxic inorganic and organic compounds into the water and air (Lewin et al. 2006). There is also the potential for hunters using boats to introduce aquatic invasive plants into the bay. Since so few individuals hunt on the refuge, we do not anticipate any greater than negligible, short-term impacts on water quality and aquatic resources.

Effects on Other Wildlife-dependent Recreational Uses

Waterfowl hunting is a longstanding public use on the refuge. Most of the refuge is closed to hunting with the exception of waterfowl hunting along the shoreline and a limited 2-day, controlled deer hunt. Although conflicts among user groups can arise, that does not appear to be a significant issue at the present level of use. In the future, we may need to manage waterfowl hunting to minimize conflicts and insure public safety, should significant conflicts become evident. That may include public outreach or zoning to separate user groups. Conflicts between hunters have not occurred, nor is it expected due to the difficulty of hunting the refuge shoreline as well as the other waterfowl hunting opportunities throughout the bay.

Summary

In summary, we anticipate that the overall direct and indirect impacts from waterfowl hunting on refuge resources will be short-term and negligible for several reasons. First, because very few visitors engage in waterfowl hunting on the refuge each year we only expect minimal amounts of disturbance to refuge wildlife from hunters. Although we do not formally track the actual numbers of hunters and their total harvest, based on staff observations, we estimate that approximately five waterfowl hunters hunt along the refuge shoreline each year. In addition, based on our estimated number of hunters and the waterfowl hunting conditions on the refuge, we expect that the total annual harvest of waterfowl on the refuge is less than 50 birds. Second, waterfowl hunting only occurs in a limited area of the refuge (only designated areas along the immediate shoreline of the refuge) and for only part of the year. The waterfowl hunting season occurs during the winter and fall, outside of the breeding season for most wildlife species. Third, we do not expect any impacts to refuge vegetation and habitats because hunting access is only permitted by boats launched from outside of the refuge and hunters only rarely come onto the refuge shoreline, mostly to retrieve downed game. Fourth, we do not expect any greater than negligible impacts on water quality because we require hunters to use nontoxic shot and remove all blinds, boats, and decoys each day. Fifth, we do not anticipate any impacts on endangered or

threatened species on the refuge because no federally threatened, endangered, or candidate species occur where waterfowl hunting is allowed. Finally, the negligible and temporary impacts of waterfowl hunting are mitigated by the presence of adjacent refuge habitat where waterfowl hunting does not occur and where birds can feed and rest undisturbed. Refuge regulations ensure that other areas of the refuge remain free of disturbance throughout the season.

We also do not anticipate any greater than negligible cumulative impacts from allowing waterfowl hunting on Great Bay Refuge. For example, we do not expect any cumulative impact on Atlantic flyway waterfowl populations. The Service manages migratory birds on a flyway basis and States establish their hunting regulations based on flyway data and the regulations framework provided by the Service. Federal and New Hampshire State regulations apply to the waterfowl hunting at Great Bay Refuge. Hunting will reduce the number of birds in the flyway, but within allowable limits as determined by State and Federal agencies.

Because the refuge has been open to hunting since it was established, and limited waterfowl hunting occurred in the area for many years before the creation of the refuge, we expect no additional impacts from continuing this use. Some negligible, short-term disturbance to non-target wildlife species may occur. However, those impacts should be minimal because waterfowl hunting occurs outside the breeding season and specific refuge regulations restrict the location and means of access.

PUBLIC REVIEW AND COMMENT:

This compatibility determination underwent public review, including a comment period of 14 days.

DETERMINATION (CHECK ONE BELOW):

- ☐ Use is not compatible.
- ☒ Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

We will manage the hunt program in accordance with Federal and State regulations, and review it annually to ensure that wildlife and habitat management goals are achieved and that the program is providing a safe, high quality hunting experience for participants. By following Federal and State regulations and enforcing the following stipulations, we will ensure that our waterfowl hunting program is compatible with the purposes for which the refuge was established:

- Waterfowl hunters must possess a valid State waterfowl hunting permit (we do not require a separate Federal permit).
- Waterfowl hunting is only allowed up to the refuge's boundary signs and hunters may not retrieve birds beyond refuge signs on the shoreline.
- The distribution of bait or attractant, or hunting over a baited area, is prohibited.
- Hunting under the influence or possessing alcoholic beverages is prohibited.
- No commercial guiding on the refuge.
- No camping, open fires, and littering.

- No removing or altering vegetation in any way.
- No permanent structures are permitted (e.g., only temporary blinds are permitted and all decoys, blinds, and boats must be removed daily).
- No overland access for waterfowl hunting (access is by boat launched outside of the refuge only).

JUSTIFICATION:

Great Bay Refuge is located in on Great Bay Estuary, a coastal estuary near Portsmouth, New Hampshire. Waterfowl hunting is a traditional and well established activity in the area. It is consistent with the purposes for which the refuge was established, the Service policy on hunting, the Improvement Act of 1997, and the broad management objectives of the National Wildlife Refuge System. Waterfowl hunting is a wildlife-dependent priority public use with minimal impact on refuge resources. It does not conflict with other types of public uses that may occur on the refuge. Hunting satisfies a recreational need, but hunting on national wildlife refuges is also an important, proactive management action that can prevent overpopulation and the deterioration of habitat.

We do not expect this use to materially interfere with or detract from the mission of the Refuge System nor diminish the purposes for which the refuge was established for the following reasons. Waterfowl hunting will not detract from the refuge's purpose to conserve and manage the refuge's diversity of plant, fish, and wildlife species because very few individuals hunt waterfowl on the refuge each year and we do not allow overland access for waterfowl hunting. Waterfowl hunting will also not detract from the refuge's purpose to protect threatened and endangered species because this use will only occur in designated areas where no federally listed or candidate species occurs, and outside of breeding and nesting seasons. Finally, this use will not detract from the refuge's purpose to fulfill international fish and wildlife treaty obligations because it will occur in accordance with State and Federal regulations for waterfowl hunting which are based on Atlantic Flyway-scale population assessments and that comply with all international treaties. This use will also not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

SIGNATURE:

Refuge Manager:

Greta W. Taylor
(Signature)

9/14/12

(Date)

CONCURRENCE:

Regional Chief:

Sean B. Kellum
(Signature)

9/19/2012

(Date)

MANDATORY 15 YEAR RE-EVALUATION DATE:

9/19/2027

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